



# Planetary Science Division Update

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# Decadal & NASA Presentations at LPSC



- Presentations at LPSC were broadcast live and available for replay at [livestream.com](http://livestream.com)
- Decadal Release:
  - [http://www.livestream.com/2011lpsc/video?clipId=pla\\_18e48f98-4a78-4acc-ad2a-29c7a8ae326c](http://www.livestream.com/2011lpsc/video?clipId=pla_18e48f98-4a78-4acc-ad2a-29c7a8ae326c)
- NASA Night:
  - [http://www.livestream.com/2011lpsc/video?clipId=pla\\_89ad644f-7be7-4bb1-806e-c14367f857ba&utm\\_source=lslibrary&utm\\_medium=ui-thumb](http://www.livestream.com/2011lpsc/video?clipId=pla_89ad644f-7be7-4bb1-806e-c14367f857ba&utm_source=lslibrary&utm_medium=ui-thumb)
- Our special *thanks* to Steve Mackwell for making LPSC with Decadal rollout so successful!

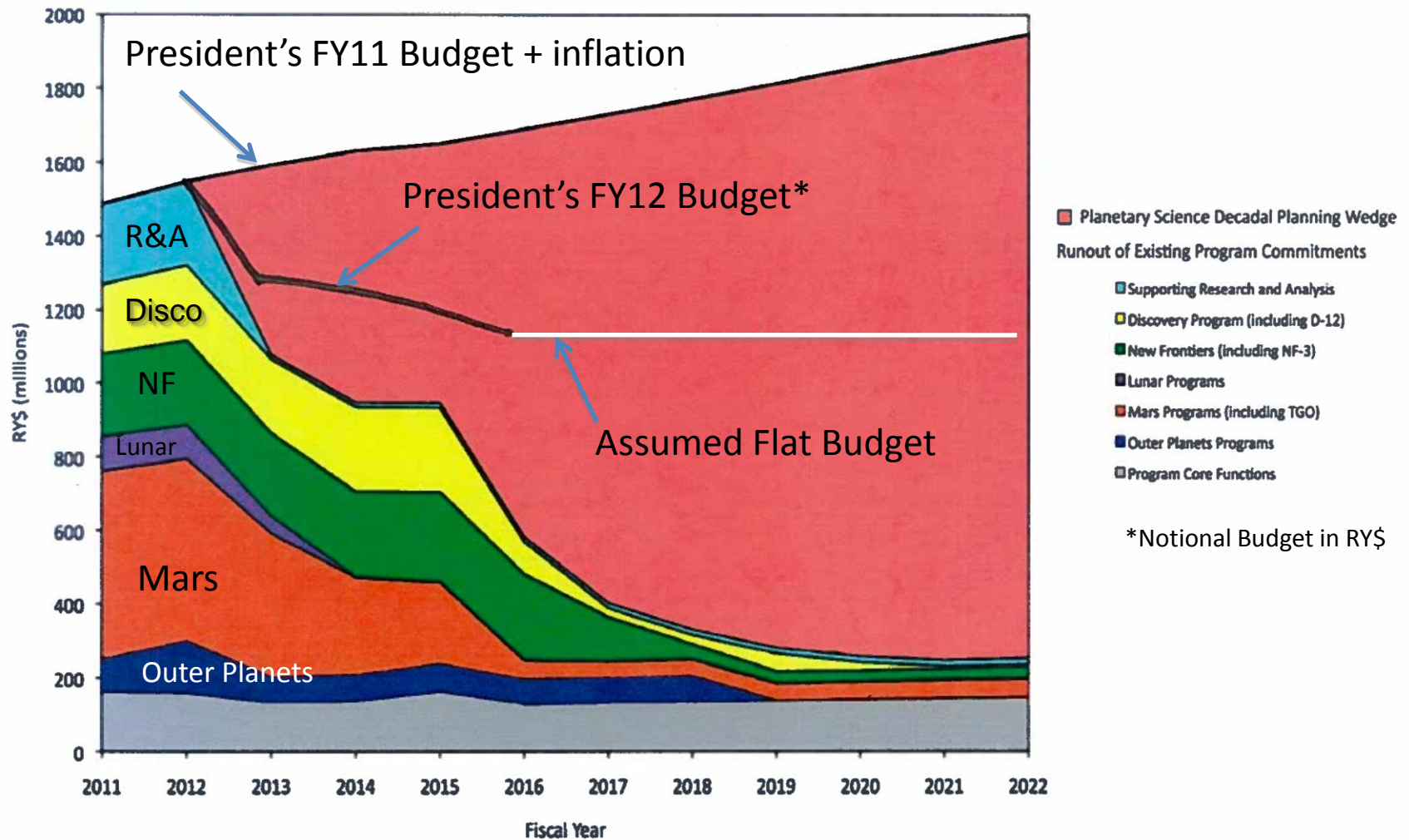
# Planetary Science Program Content



	FY 2010	Pres Bud	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
<b><u>Planetary Science</u></b>	<b><u>\$1,364.4</u></b>	<b><u>\$1,485.7</u></b>	<b><u>\$1,488.9</u></b>	<b><u>\$1,365.7</u></b>	<b><u>\$1,326.4</u></b>	<b><u>\$1,271.0</u></b>	<b><u>\$1,188.9</u></b>
<i><u>Planetary Science Research</u></i>	<i><u>\$161.6</u></i>	<i><u>\$180.4</u></i>	<i><u>\$183.9</u></i>	<i><u>\$196.0</u></i>	<i><u>\$208.6</u></i>	<i><u>\$208.4</u></i>	<i><u>\$210.5</u></i>
Planetary Science Research and Analysis	\$131.5	\$131.0	\$134.6	\$135.3	\$140.0	\$142.8	\$149.8
Other Missions and Data Analysis	\$21.3	\$23.9	\$23.7	\$25.5	\$31.7	\$28.2	\$23.0
Education and Directorate Management	\$3.0	\$5.1	\$5.1	\$14.7	\$16.3	\$16.7	\$16.5
Near Earth Object Observations	\$5.8	\$20.3	\$20.4	\$20.5	\$20.6	\$20.7	\$21.1
<i><u>Lunar Quest Program</u></i>	<i><u>\$94.5</u></i>	<i><u>\$121.6</u></i>	<i><u>\$114.5</u></i>	<i><u>\$81.2</u></i>	<i><u>\$48.9</u></i>	<i><u>\$28.1</u></i>	<i><u>\$19.5</u></i>
Lunar Science	\$31.4	\$59.7	\$50.9	\$48.1	\$48.9	\$28.1	\$19.5
Lunar Atmosphere and Dust Environment Explorer	\$48.2	\$57.9	\$63.2	\$33.1	Notional		
International Lunar Network	\$14.9	\$4.0	\$0.3				
<i><u>Discovery</u></i>	<i><u>\$184.5</u></i>	<i><u>\$202.0</u></i>	<i><u>\$175.6</u></i>	<i><u>\$205.1</u></i>	<i><u>\$245.7</u></i>	<i><u>\$265.5</u></i>	<i><u>\$242.8</u></i>
Gravity Recovery and Interior Laboratory (GRAIL)	\$124.1	\$104.8	\$40.5	\$4.4			
Other Missions and Data Analysis	\$60.4	\$97.2	\$135.1	\$200.6	\$245.7	\$265.5	\$242.8
<i><u>New Frontiers</u></i>	<i><u>\$279.6</u></i>	<i><u>\$223.8</u></i>	<i><u>\$176.9</u></i>	<i><u>\$265.8</u></i>	<i><u>\$245.5</u></i>	<i><u>\$291.1</u></i>	<i><u>\$296.3</u></i>
Juno	\$257.1	\$184.2	\$31.2	\$17.6	\$17.9	\$16.7	\$29.6
Other Missions and Data Analysis	\$22.4	\$39.6	\$145.7	\$248.2	\$227.6	\$274.4	\$266.7
<i><u>Mars Exploration</u></i>	<i><u>\$438.2</u></i>	<i><u>\$532.8</u></i>	<i><u>\$594.4</u></i>	<i><u>\$433.1</u></i>	<i><u>\$408.7</u></i>	<i><u>\$309.0</u></i>	<i><u>\$245.9</u></i>
2009 Mars Science Lab	\$258.4	\$231.6	\$136.4	\$40.5	\$37.0		
MAVEN	\$48.1	\$161.2	\$240.3	\$140.6	\$34.9	\$15.4	\$4.7
Other Missions and Data Analysis	\$131.7	\$140.0	\$217.7	\$252.0	\$336.8	\$293.5	\$241.1
<i><u>Outer Planets</u></i>	<i><u>\$100.6</u></i>	<i><u>\$103.5</u></i>	<i><u>\$120.8</u></i>	<i><u>\$80.5</u></i>	<i><u>\$82.2</u></i>	<i><u>\$84.1</u></i>	<i><u>\$88.5</u></i>
<i><u>Technology</u></i>	<i><u>\$105.5</u></i>	<i><u>\$121.5</u></i>	<i><u>\$122.9</u></i>	<i><u>\$104.1</u></i>	<i><u>\$86.6</u></i>	<i><u>\$84.9</u></i>	<i><u>\$85.4</u></i>

# Planetary Funding Profiles

## FY11 and FY12 Requests



# Planetary Science Program Structure

*The budget cannot support all 5 [current] flight development programs; Decadal Survey will provide priorities to guide decision-making on which programs will be implemented as planned, and which may have to be cancelled, delayed, or descope.*

## Current

- Discovery
- Mars Exploration
- Lunar Quest
- New Frontiers
- Outer Planets
- Research
- Technology

## Implied by DS

- Discovery\*
- New Frontiers\*
- Flagship missions\*\*
- Research
- Technology

\* The three mission programs are based on cost category, independent of destination.

\*\* Not labeled as such, but listed as individual missions.



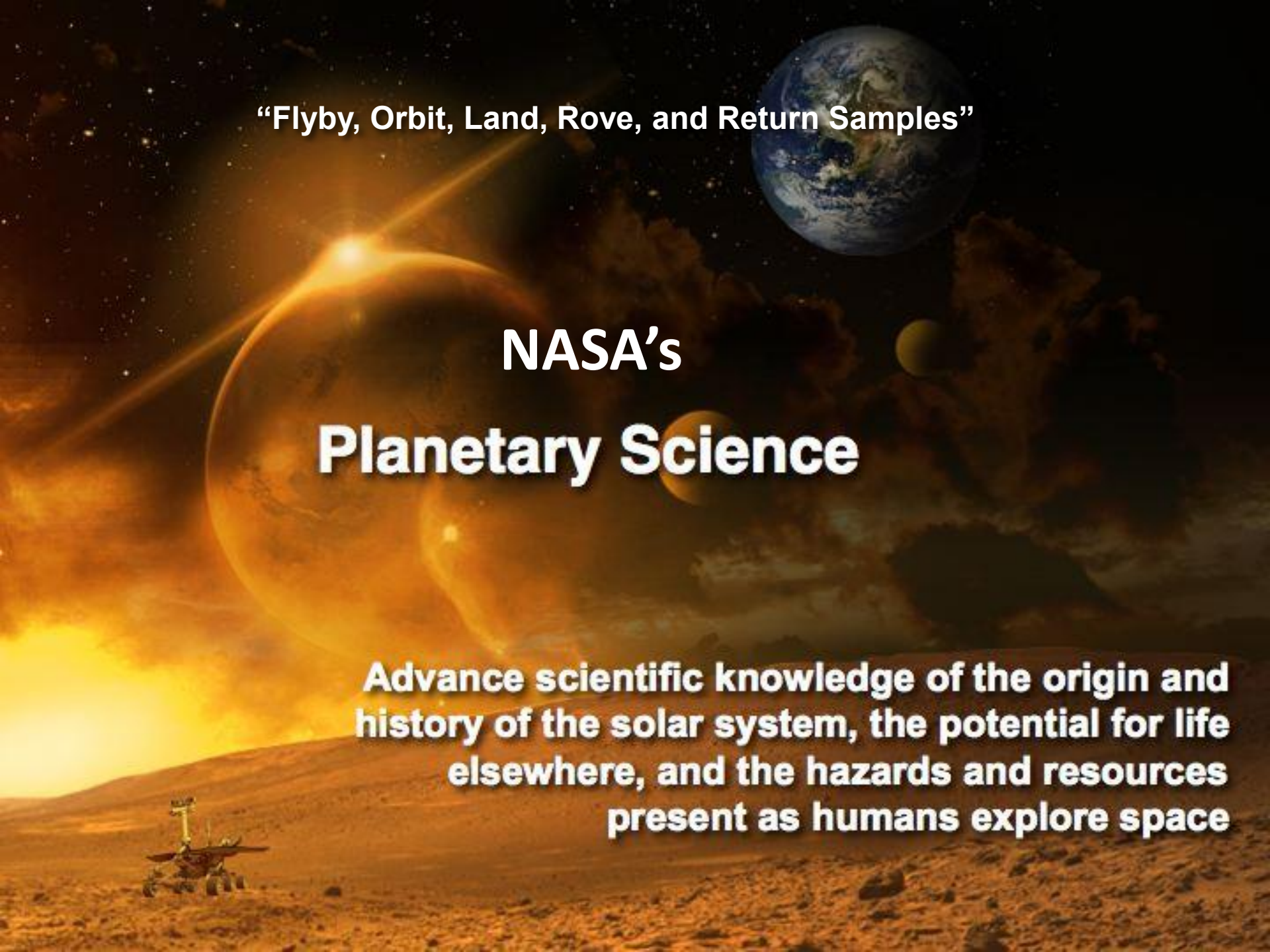
# Depiction of the Planetary Program Architecture Recommended in the Survey

Large Missions (“Flagship”-scale)		
<i>“Recommended Program”</i> <i>(budget increase new start for JEO)</i>	<i>“Cost Constrained Program”</i> <i>(based on FY11 Request)</i>	<i>“Less favorable” budget picture than assumed</i> <i>(e.g., outyears in FY12 request)</i>
1) Mars Astrobiology Explorer-Cacher (MAX-C) – descoped	1) Mars Astrobiology Explorer-Cacher (MAX-C) – descoped	Descope or delay Flagship missions
2) Jupiter Europa Orbiter (JEO) – descoped	2) Uranus Orbiter & Probe (UOP)	
3) Uranus Orbiter & Probe (UOP)		
4/5) Enceladu Orbiter & Venus Climate Mission		
Discovery		
\$500M (FY15) cap per mission (exclusive of launch vehicle) and 24 month cadence for selection		
New Frontiers		
\$1B (FY15) cap per mission (exclusive of launch vehicle) with two selections during 2013-22		
Research & Analysis (5% above final FY11 amount then ~1.5%/yr)		
Technology Development (6-8%)		



# NASA-ESA bilateral

- Planetary Decadal provides a clear path forward when combined with the President's FY12 budget
- Determine if Mars 2018 can be accomplished starting with the minimum set of requirements and “a clean sheet of paper” as Planetary's top priority flagship mission
- Reaffirm NASA's commitment to support ESA's *Laplace* mission if it is chosen as the CV-Large class mission
  - Up to 5 of the scientific instruments on JGO as a Mission of Opportunity and support for their PI-led teams
  - Support for Interdisciplinary Scientists
  - A NASA Project Scientist to co-chair the international Project Science Group (PSG) with ESA Project Scientist



**“Flyby, Orbit, Land, Rove, and Return Samples”**

# **NASA's Planetary Science**

**Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space**